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CURRENT LITERATURE IN AGRICULTURAL ENGINEERING

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Vol. 8, No. 7.

WASHINGTON, D. C.

February 1939.

Agricultural Engineering.

Agricultural engineering research and tractor testing. Implement and Machinery Review. v. 64, no. 764. p. 817-825. December 1, 1938. Review of development of scheme and description of modern facilities now available.

Tractor fuels, rubber tires and new hay handling methods feature A.S.A.E. Sessions. Implement and Tractor. v. 53, no. 25. p. 42-43, 46. December 10, 1938.

Agriculture.

Agricultural outlook for Illinois, 1939. Urbana, Ill., 1938. 32p. University of Illinois. Agricultural experiment station. Circular 488.

Agricultural research in Colorado; Fifty-first annual report Colorado experiment station, 1937-38. Fort Collins, Colo., 1938. 60p.

Epistle to the farm. By C.R. Orton. Report of the Director, West Virginia agricultural experiment station, Morgantown, for the biennium 1936 to 1938. Morgantown, W. Va., 1938. 53p. West Virginia agricultural experiment station. Bulletin 290.

Federal, state, and local administrative relationships in agriculture. By C. R. Ball. Berkeley, Calif., University of California press, 1938. 2 v.

Fifty first annual report of the Kentucky agricultural experiment station for the year 1938. Part II. Lexington, Ky., 1938. 408p. University of Kentucky. Agricultural experiment station. Bulletins 378-388. Circular 49.

Making farm crops more available for industry. By L.F. Livingston. California Cultivator. v. 85, no. 21. October 8, 1938. p. 605, 620-621. In order to make farm crops more available for industry, and industry more available for farm crops, these things must be remembered. First, that farming is business, not merely vocation, and it must be treated as any other business. Second, that research, with special emphasis on chemurgic research, is main answer to subject, but that agricultural engineering research must keep pace with other departments in order to secure chemurgic success. Third, that research has scarcely scratched surface of possibilities even now evident to those informed on subject. Fourth, that capital must have confidence in future, to be

Agriculture. (Cont'd)

willing to risk investing in long-term research. Fifth, that states expecting to benefit from chemurgic factories should study their fiscal and tax condition and compare them with their neighbors.

Ninth biennial report of the Director Agricultural experiment station. Kansas state college of agriculture. 1936-1938. Topeka, Kans., 1938. 145p.

Reference on agriculture in the life of the nation. By E.E. Edwards. Washington, D.C., 1939. 73p. Mimeographed. U.S. Department of agriculture. Library. Bibliographical contributions. No. 34.

Report of the Puerto Rico experiment station, 1937. Washington, U.S. Govt. print. off., 1938. 115p. U.S. Department of agriculture. Office of experiment stations.

Selected references on the history of agriculture in the United States. By E.E. Edwards. Washington, D.C., 1939. 43 p. Mimeographed. U.S. Department of agriculture. Library. Bibliographical contributions. No. 26 (Edition 2).

Air Conditioning.

Engineering aspects of air conditioning for human comfort. By Charles S. Leopold. Ice and Refrigeration. v. 96, no. 1. p. 25-27. January, 1939.

Summer cooling in the warm air heating research residence with cold water. By A.P. Kratz and others. Urbana, Ill., 1938. 92p. University of Illinois. Engineering experiment station. Bulletin no. 305.

Alcohol Fuel.

Agrol is political issue in Iowa campaign. By E.L. Barringer. National petroleum news. v. 30, no. 40. p. 21-22. October 5, 1938. Article details Republican congressional candidate's stand on Agrol and also general overall picture of why Agrol is logical farm program to pit against New Deal's farm policy.

Alky-gas impractical, chemist meeting told. By Arch L. Foster. National petroleum news. v. 30, no. 36. p. 9-10. September 7, 1938.

Chemurgy aims at alky plants for farm belt. By M.G. VanVoorhis. National Petroleum News. v. 30, no. 18. p. 9, 18. May 4, 1938. Announced at Fourth annual chemurgic conference chemical foundation, early backer of program to make alcohol from farm produce to blend with gasoline for motor fuel, had withdrawn further support from National farm chemurgic council. Future program of Council for development of power alcohol, as far as could be observed is to promote alcohol

Alcohol Fuel. (Cont'd)

plants through local Chambers of commerce in towns in middle west farming territory.

Farm crop alcohol is found impracticable as motor fuel. By Arch L. Foster. National petroleum news. v. 30, no. 52. p. 8. December 28, 1938. Alcohol from crop wastes and cull products would not be sufficient for 5 percent "alky-gas" blend, they find, even if it is practicable to gather these wastes in suitable quantities at centralized points. This collection in addition is not practicable, they say, since culls, except in isolated cases are scattered over millions of farms in small individual amounts, too small to pay cost of transportation to distilling plants.

Associations.

Institution of British agricultural engineers. Rural Electrification and Electro-Farming. v. 14, no. 163. p. 138-139. December 1938. Its origin, aims and objects.

Chemicals.

Synthetic organic chemicals; World developments and foreign markets. By C.C. Concannon and J.N. Taylor. Washington, U.S. Govt. print. off., 1938. 164p. U.S. Bureau of foreign and domestic commerce. Trade promotion series no. 189.

Chemistry, Technical

Chemists convert waste lignin into valued raw material. Popular Mechanics Magazine. v. 70, no. 2. p. 164. August, 1938. In U.S. Forest Products Laboratory at Madison, Wisconsin, ways have been found to make lignin into wood alcohol; into propyl-cyclohexanol, which may be used as lacquer solvent or wood preservative; into adhesive resin which promises to become valuable plastic material, and into other compounds for chemical and lacquer industries.

Corrosion.

Corrosion of metals in the soap and allied products industries. By G.L. Cox. Industrial and Engineering Chemistry. v. 30, no. 12. p. 1349-1355. December, 1938. Results of number of corrosion tests that have been made in operating plant equipment associated with production of soaps, fatty acids, and by-products from these processes are reported. These results are discussed in light of plant experiences, and typical examples of service records are cited. Results are indicated generally to serve as useful guide in selection of proper materials for construction of equipment handling these processes.

Fatigue and corrosion fatigue of steels. By B.B. Wescott. Mechanical Engineering. v. 60, no. 11. November 1938. p. 813-822,

Corrosion. (Cont'd)

Bibliography: p. 828. Brief review of present knowledge regarding some aspects of behavior of steel under repeated stresses, a phenomenon universally referred to as fatigue, and it is author's hope that this knowledge may be applied to development of more durable equipment for production of crude oil.

New method of tank protection. By O.B. Hess. Water works and **Sewerage**. v. 85, no. 11. p. 1049-1050. November, 1938. Experiences with an electrical method of rust prevention.

Cotton Gins and Ginning.

Air-blast gin performance and maintenance. By A.J. Johnson and T.L. Baggett. Washington, U.S. Govt. print. off., 1938. U.S. Department of agriculture. Circular no. 510.

Cotton Machinery.

Cotton harvesting and handling. By F.L. Gerdes, W.J. Martin and C.A. Bennett. Washington, D.C., U.S. Bureau of agricultural economics and Bureau of agricultural engineering, 1938. 13p. Processed.

Mechanical cotton pickers. Mechanical Engineering. v. 60, no. 11. November 1938. p. 866-868.

Rembert-type fan and low-tower seed-cotton drying systems. Washington, D.C. U.S. Department of agriculture. Cotton ginning laboratories. Bureau of agricultural engineering and Bureau of agricultural economics. 3 p. Mimeographed.

Steel fingers. By Arnold Skrommo. Iowa agriculturist. v. 39, no. 4. p. 6, 15. November, 1938. Dr. E.G. McKibben studies new developments in mechanical cotton picking, forecasts trends.

U.S.D.A. low-tower pressure cotton drier. Washington, D.C. U.S. Department of agriculture. Cotton ginning laboratories. Bureau of agricultural engineering and Bureau of agricultural economics. n.d. 2 p. Mimeographed.

U.S.D.A. model hy low-tower seed-cotton drier over cleaner, Washington, D.C. U.S. Department of agriculture. Cotton ginning laboratories. Bureau of agricultural engineering and Bureau of agricultural economics. n.d. 3 p. Mimeographed.

Drainage.

Drainage maintenance program. In Twenty-seventh annual report of Purdue university, Department of agricultural extension, July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. 119p.

Drainage. (Cont'd)

Work of the Essex rivers catchment board. Journal of the Ministry of agriculture. v. 45, no. 6. p. 556-562. September, 1938.
Land drainage.

Drying, (Crops)

Grass drying: a preliminary survey and discussion. By W.F. Darke and others. Journal of the Ministry of agriculture. v. 45, no. 7. p. 682-690. October, 1938.

Seed corn driers. In Twenty-seventh annual report of Purdue University, Department of agricultural extension, July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. p. 28-29.

Dynamometer.

Horse dynamometer. In Twenty-seventh annual report of Purdue university, Department of agricultural extension, July 1, 1937 to June 30, 1938. p. 26.

Electric Wiring.

House wiring methods. By T.C. Gilbert. Electrical Review. v. 123, no. 3185. p. 825-826. December 9, 1938. Some suggested improvements.

Electricity on the Farm.

Depreciation of farm electrical equipment. Rural Electrification and Electro-Farming. v. 14, no. 163. p. 131. December, 1938.

Electrical proving farm. Pennsylvania Farmer. v. 119, no. 7. p. 1, 11. September 24, 1938.

Electricity as an aid to farming. By W. Fletcher Cooper. Electrical Review. v. 123, no. 3185. p. 823-824. December 9, 1938. One of principal obstacles to rural electrification is farmer's lack of knowledge of benefits to be derived from it. Author stresses need for closer contact between electricity suppliers, manufacturers and retailers on one hand and farmer on other. Vital question of cost is also dealt with.

Rural electrification. In Twenty-seventh annual report of Purdue university, Department of agricultural extension. July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. p. 26-28.

Third annual report to Congress of Electric home and farm authority covering operations from July 1, 1937 to June 30, 1938. Washington, D.C., 1938. 25 p. Mimeographed.

Engineering.

Engineering's part in the development of civilization. By D.C. Jackson. Mechanical Engineering. v. 60, no. 11. November 1938. p. 839-843. Part V - Inseparability of engineering and civilization.

Value of history in engineering education. By H.W. Dickinson. Troy, N.Y., 1938. 9 unnumb. p. Rensselaer polytechnic institute bulletin. Engineering and science series. No. 55.

Erosion Control.

Erosion and related land use conditions on the Froid demonstration project, Montana. By W.C. Boatright. Washington, U.S. Govt. print. off., 1938. 28p.

River-control problems. By Herbert Chatley. Engineering. v. 146, no. 3801. p. 579-580. November 18, 1938. Part I -- Soil erosion.

Soil conservation and farm equipment. By G.N. Geiszler. Northwest farm equipment journal. v. 53, no. 1. p. 42-44. January 1939.

Soil stabilization with emulsified asphalt. By R.M. Morton. Agricultural Engineering. v. 19, no. 11. November 1938. p. 475-477. Stabilizing disclosed by research. Binding action of clays caused by absorption of moisture. Amount of emulsified asphalt required. Methods of mixing. Efficiency tests of stabilized materials. Uses of stabilized materials.

Evaporation.

Evaporation rates of moisture from a wet material and from a free water surface. By A.E. Stacey, Jr. Industrial and Engineering Chemistry. v. 30, no. 12. p. 1385-1389. December, 1938. Test data, typical of materials varying widely in physical properties, were selected as basis for paper. Data presented offer an approximate method for estimating physical properties comparable to those of materials used in these experiments. (b) effect on time of drying by means of varying loading per square foot of tray surface, and (c) effect of vapor pressure difference on time of drying.

Extension.

Annual report of the Maine extension service for the year ending June 30, 1938. Orono, Me., 1938. 40 p. University of Maine. College of agriculture, extension service. Extension bulletin no. 254.

Twenty-seventh annual report of Purdue university, Department of agricultural extension, July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. 119 p.

Farm Building.

Farm building plan service. In Twenty-seventh annual report of Purdue university, Department of agricultural extension July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. p. 28.

Farm Machinery-Housing.

Winter protection for farms machinery pays. By E.N. Humphrey. Better Farm Equipment and Methods. v. 11, no. 4-5. p. 7. January 1939.

Farm Machinery and Equipment.

For better farming, improved farm machinery is available for every job. By Harry G. Davis. Progressive farmer and southern ruralist. v. 53, no. 11. p. 8-9. November, 1938.

Improved harvesting practices. Orono, Me., 1938. p. 10. University of Maine. College of agriculture. Extension service. Extension bulletin no. 254.

Mechanizing the sugar beet. Implement Record. v. 35, no. 12. p. 15-16, 32. December, 1938. Progress toward an all-machine operation is being made at Davis.

New tractor binder. Implement and machinery review. v. 64, no. 764. p. 793-794. December 1, 1938.

Plow trash shield demonstrations. In Twenty-seventh annual report of Purdue university, Department of agricultural extension, July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. p. 25-26.

Portable seed cleaners. In Twenty-seventh annual report of Purdue university, Department of agricultural extension, July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. p. 26.

Remote control. By Arnold Skrome. Iowa agriculturist. v. 39, no. 5. p. 14. December, 1938. Compact, easy to handle, and with a convenient speed range, new type of "Horseless" wagon is economical in fuel use.

Small combined harvester-thresher with big combine capacity. Implement and Machinery Review. v. 64, no. 764. p. 795-796. December 1, 1938.

Sugar-beet machinery. In Agricultural research in Colorado; Fifty-first annual report Colorado experiment station, 1937-38. Fort Collins, Colo., 1938. p. 22-23. Fertilizer tests. Ridge vs. flat planting Beet planter furrow openers. Mechanical thinning.

Use of the new plough-subsoiler and its effect on soil structure. By H.J. Hopfen. Monthly bulletin of agricultural science and practice. v. 29, no. 10. p. 382T-395T. October, 1938. Problem

Farm Machinery and Equipment. (Cont'd)

of soil structure has recently led to production of combination-implements with which it is possible to carry out surface and deep tillage in one operation. These implements are specially suitable for impermeable and hardpan soils. Advantages of these tillage tools are still being discussed and investigated by specialists. It is desired to ascertain to what extent it is possible by further improvement of these implements, to obtain, improved soil structure, and also to determine when it is advantage to combine operations of plough and subsoiler and to what depth and to what speed these should be carried out.

Farm Power.

Men and machines. Mechanical Engineering. v. 60, no. 10. October 1938. p. 772-773. Ever since the beginning of the machine age, we have progressed toward higher and higher standards of living, toward higher wages, toward more employment opportunity by following the basic prosperity formula. It is this: More power, better machinery, better output per man-hour, higher wages, and more customer value in price or in quality.

Sources of farm power. By William Boss. Northwest Farm Equipment Journal v. 52, no. 11. November 1938. p. 38-39. Wind. Water. Steam. Gas.

Fences, Electric

Electro-farming today. By R. Borlase Matthews. Rural Electrification and Electro-Farming. v. 14, no. 163. p. 124-125. December, 1938. How use of electricity in rural areas is developing, and some suggestions for future.

Facts about electric fence. By George Kable. Northwest farm equipment journal. v. 53, no. 1. p. 50. January, 1939.

Possibilities of the electric fence. By J.B. Griener. Purdue Agriculturist. v. 33, no. 3. p. 3-4. December, 1938.

Fertilizer.

Fertilizer and manure experiments on Dunmore silt loam soil. By M.S. Kipps and T.B. Hutcheson. Blacksburg, Va., 1938. 22 p. Virginia polytechnic institute. Bulletin 317.

Fireplaces.

Prehistoric fireplace dates from about 1700 B.C. Science News Letter. v. 34, no. 22. p. 344. November 26, 1938.

Floods and Flood Control.

Flood forecasting. By Herbert F. Gough. Scientific American. v. 158, no. 5. p. 261-264. May, 1938. Daily gaging of Tennessee Valley

Floods and Flood Control. (Cont'd)

stream levels and rainfall. Dams store or release water accordingly.
For flood control, navigation.

Flood routing: discussion. By William T. Collins and others.
Proceedings. American society of civil engineers. v. 64, no. 8,
part 1. p. 1704-1711. October, 1938.

The land in flood control. Washington, U.S. Govt. print. off., 1938.
38 p. U.S. Department of agriculture. Miscellaneous publication
no. 331.

Floors.

Cement-sawdust concrete for poultry house and dairy barn floors.
By R.R. Skelton. Durham, N.H., 1938. 13 p. University of New
Hampshire, Extension service. Extension circular 217.

Flow of Air.

Flow of air and natural gas through porous media. By T.W. Johnson and
D.B. Taliaferro. Washington, U.S. Govt. print.off., 1938. 55 p.
U.S. Bureau of mines. Technical paper 592.

Frictional resistance to the flow of air in straight ducts. By F.C.
Houghten and others. Heating, piping and air conditioning. v. 10,
no. 12. p. 791-801. December, 1938. Paper includes results of
study on frictional resistance to flow of air in 4", 8" and 24" round
ducts and square ducts of approximately equivalent carrying capacity
for same frictional resistance. Results of frictional resistance to
flow of air in straight ducts without joints and added resistance of-
fered by joints are included. Paper also presents relationship between
friction factor and Reynolds number found for round ducts.

Flumes.

Laboratory investigation of flume traction and transportation: discussion.
By Lorenz G. Straub. Proceedings. American society of civil
engineers. v. 64, no. 8. part 1. p. 1699-1703. October, 1938.

Forage Crops.

Grass silage. By F.H. Hamlin. Agricultural Engineering. v. 19,
no. 11. November 1938. p. 471-472, 478. Bibliography.

Grain Elevators.

Operating problems of farmers' elevators in Nebraska. By L.F. Garey.
Lincoln, Neb., 1938. 29 p. University of Nebraska. College of
agriculture experiment station. Bulletin 314.

Hay Handling.

Chemistry puts in the silo. By H.A. Marple. Monsanto. v. 17, no. 4. p. 4-7. November, 1938. Farmer today is cutting hay at lowered costs and eliminating losses that had been up to this time from 20 to 100 percent. Preservatives have been discovered, and today agriculture, the greatest enterprise in the United States, is again reaping the rewards of scientific research.

Heating.

Hot air pays. By G.C. Kohlar. Power Plant Engineering. v. 42, no. 11. November 1938. p. 696-699. Preheated combustion air, when properly applied, can increase efficiencies and capacities, reduce maintenance and, in some cases lower construction costs.

Hotbeds and Cold Frames.

Cloth houses. By Alex Laurie and Conrad Link. Wooster, Ohio, 1938. 37 p. Ohio agricultural experiment station. Bulletin 594. Bibliography: p. 37.

Hotbeds and cold frames. By T.A. Marsden, Jr. and J.R. Hepler. Durham, N.H., 1938. 4 p. University of New Hampshire, Extension service. Extension circular 214.

Hydraulics.

Fifth annual report of special committee on hydraulic research. Civil Engineering. v. 9, no. 2. p. 109-110. February, 1939.

Hydroponics.

Truth about tank farming. Popular Mechanics Magazine. v. 70, no. 2. p. 232-235, 118A-119A. August, 1938.

Water-culture method for growing plants without soil. By D.R. Hoagland and D.I. Arnon. Berkeley, Calif., 1938. 39 p. University of California. Agricultural experiment station. Circular 347.

Hygrometers.

Electric hygrometer and its application to radio meteorography. By F.W. Dunmore. Washington, U.S. Govt. print. off., 1938. 723-742 p. U.S. National bureau of standards. Research paper RP1102. Part of Journal of research of the National bureau of standards, volume 20, June 1938.

Ice Wells.

Ice well for the dairy farm. By J.R. Dawson and A.L. Watt. Washington, D.C., 1938. 15 p. U.S. Department of agriculture. Circular no. 155.

Irrigation.

Irrigation. In Twenty-seventh annual report of Purdue university, Department of agricultural extension, July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. p. 24.

Irrigation investigations. In Agricultural research in Colorado; Fifty-first annual report Colorado experiment station, 1937-38. Fort Collins, Colo., 1938.

Jute.

Research laboratories for jute technology. Electrical Times. v. 94, no. 2462. p. 895. December 29, 1938. Indian central jute committee has opened technological research laboratories equipped with machinery for carrying out spinning trials, spinning machinery being similar to that in any up-to-date electrically drive jute mill save that some of units are sub-standard as far as size is concerned.

Kitchens.

Williamette valley farm kitchen. By Maud Wilson. Corvallis, Oreg., 1938. 82 p. Oregon state college. Agricultural experiment station. Bulletin 356.

Labor.

Jobs, machines and unemployment. Washington, U.S. Govt. print.off. 1938. 8 p. Reprinted from Report on progress of the WPA program, June 30, 1938.

Labor productivity in the growing of corn. Monthly labor review. v. 47, no. 3. p. 533-535. September, 1938. Number of hours per acre required in production of corn declined from average of 28.7 during period 1909-13 to average of 22.5 during period 1932-36. Decline in hours required per 100 bushels was from 109 to 90. Total labor used in production of corn declined during same interval from 2,898,000,000 to 2,276,000,000 man-hours per year.

Outlook for farm labor, equipment, fertilizer for 1939. Compiled by the Bureau of agricultural economics, U.S. Department of agriculture. American Fertilizer. v. 89, no. 10. November 12, 1938. p. 9, 22. Combined level of farm-wage rates and prices of commodities used in agricultural production probably will average a little lower in 1939 than in 1938. Some declines in prices of automobiles and farm machinery have recently been announced and some further downward adjustment in machinery prices is probable for 1939. Dollar value of manufacturers' sales of farm machinery this year was 20 to 25 percent less than the record sales of 1937. The use of pneumatic tires on tractors and field machinery appears to be increasing. In 1935, about 14 percent of the wheel tractors manufactured were equipped with rubber tires, in 1936 about 30 percent; in 1937 about 46 percent; and production schedules for 1938.

Lubrication.

Thin oil films. Lubrication. v. 24, no. 12. p. 133-144.
December, 1938.

Miscellaneous.

Annual report of the Secretary of the Interior for the fiscal year ended June 30, 1938. Washington. U.S. Govt. print. off., 1938. 180 p.

Annual report of the Surgeon general of the Public health service of the United States for the fiscal year 1938. Washington, U.S. Govt. print. off., 1938. 184 p.

Report of the Chief of engineers, U.S. army, 1938. Washington, U.S. Govt. print. off., 1938. v. 1, in 2 parts. v. 2.

Seven place natural trigonometrical functions. By H.C. Ives. New York, John Wiley & Sons, Inc., 1929. 222 p.

Motor Fuel.

Motor fuel demands of modern engines. By W.W. Scheumann. National petroleum news. v. 30, no. 46. p. 22-28. November 16, 1938. Far reaching changes in the characteristics of motor fuels which have been made in past several years by refiners, have been in order that full advantage could be taken by public of improved engine performance resulting from higher compression ratios, higher speeds and increased number of cylinders. Important changes made have affected principally the molecular structure of the fuel itself, to eliminate tendency of fuel to "knock", and its volatility, to improve easy-starting and accelerating qualities of motor fuel.

Motor fuel economy of Europe. New York, N.Y., Committee on motor fuels, American petroleum institute, 1939. 23 p. American petroleum institute. Committee on motor fuels. Motor fuel facts series no. 2.

Motor Vehicles.

Automobile facts and figures. 1938 ed. New York, Automobile manufacturers association, inc., 1938. 96 p.

Engineering terminology; Definitions of technical words and phrases. By V.J. Brown and D.G. Runner. Chicago, Gillette publishing company, 1938. 310 p.

Motors, Electric

Built in hermetically sealed motors. By T.R. Lawson. Refrigerating Engineering. v. 36, no. 5. p. 312-315. November, 1938. For air conditioning and refrigeration units.

Motors, Electric (Cont'd)

Motor drives and electric controls on machine tools. By B.P. Graves. Mechanical Engineering. v. 60, no. 10. October 1938. p. 729-734. Paper is written to describe some functions which have been and can be accomplished with electrical designs. Paper is divided into three sections and will give illustrations of some of electric drives and controls used by machine-tool builders in New England. Section 1 discusses general reasons for increasing use of electrical equipment on machine tools and gives numerous examples of features and functions which are possible with electric machines. Section 2 considers some of practical aspects of design of electrically driven and controlled machines and comments on some of problems encountered and their possible solutions. Section 3 describes in some detail milling machine and grinding machine, each of which is electrically controlled.

Nomenclature.

Suggested new definitions for proportional limit and yield point. By L.H. Donnell. Mechanical Engineering. v. 60, no. 11. November 1938. p. 837-838.

Pipes and Piping.

Improved hot water supply piping. By J.M. Krappe. Lafayette, Ind., 1939. 28 p. Purdue university. Engineering experiment station. Research series no. 64.

Pipe capacities. By J.R. Griffith. American Farm Digest. v. 1, no. 1. November 1938. p. 38-39. Gives chart permitting quick approximations of hydraulics of pipe lines.

Plywood.

Exposure tests on plywood. By Don Brouse. Mechanical Engineering. v. 60, no. 11. November 1938. p. 852-856. Bibliography: p. 856. Controlled tests indicate durability of water-resistant glue joints.

Poultry Houses and Equipment.

How to build range shelters. By A.E. Tepper and T.B. Charles. Durham, N.H., 1938. 4 p. University of New Hampshire extension service. Extension circular 216.

Range shelters for chickens. By F.D. Reed and M.G. Huber. Orono, Me., 1939. 6 unnumb. p. University of Orono. College of agriculture. Extension service. Circular no. 123.

Power.

Energy resources of the world. Power Plant Engineering. v. 43, no. 1. p. 32-37. January, 1939. Various forms of coal,

Power. (Cont'd)

petroleum and gas constitute the major sources of power used in industry today. Available water power sites are being developed as economic and social needs indicate. Other sources are but little used.

Hoofs or wheels? By Bob Crossley. Iowa Agriculturist. v. 39, no. 4. p. 7. November, 1938. W.D. Goodsell delves into cost accounts of more than 1900 Iowa farms in comparative study of horse power and tractor power; releases significant figures.

Man and the machine. By Morris S. Viteles. Power Plant Engineering. v. 43, no. 1. p. 50-53. January, 1939. In spite of its abuse, power-machine has brought improvements in conditions of work and standards of living that have completely revolutionized Western World. To place upon it blame for evils of our age is easy way of escape which overlooks real issue at bottom of our problem. This is failure of mankind to apply strictly simple truth that "we tend to mechanically perfect society in which we will either master machine or be enslaved by it." Road to mastery is complete understanding of inter-play of human and mechanical forces in complex industrial civilization created by power machines. To arrive at such understanding, with aim of promoting by systematic, scientific methods, more effective application of human energy in occupational life and correspondingly higher standard of comfort and welfare for workers is task to which psychologists, engineers and other scientific groups must continue to devote themselves.

Power as a national problem. By J.D. Ross. Power Plant Engineering. v. 43, no. 1. p. 12-17, 68-69. January, 1939. If the history of the growth of the use of power is any criterion, in 17 years we shall be using ten times the amount of power we are using today. To satisfy this coming need we will need vastly increased plant facilities and greatly extended transmission lines and distribution systems.

Power as a problem in energy conversion. By David Moffat Meyers. Power Plant Engineering. v. 43, no. 1. p. 28-31. January, 1939. Alcohol made from farm products looks promising, direct use of energy from the sun gives promise but fuel reserves are sufficient for centuries and effective utilization of power is a more pressing problem.

Rise in man's use of power. By Albert Einstein. Power Plant Engineering. v. 43, no. 1. p. 38-49. January, 1939.

Social implications of power. Power Plant Engineering. v. 43, no. 1. p. 4-7. January, 1939.

Production Costs.

Winter wheat production costs, Nebraska, 1937. By A.G. George. Lincoln, Neb., 1938. 19 p. Processed. Nebraska cooperative extension work in agriculture and home economics. Extension circular 839.

Quick Freeze.

Freezing fruits. Cold storage and produce review. v. 41, no. 485.
p. 216. August 18, 1938. Preparations for storage in lockers.

Quick-freezing and food preservation. Lubrication. v. 24, no. 11.
p. 121-132. November, 1938.

Quick freezing fruits and berries. By R. Brooks Taylor. Refrigerat-
ing Engineering. v. 36, no. 5. p. 303-306. November 1938.

Some commercial aspects of the frozen food industry. By Harry Carlton.
Refrigerating Engineering. v. 36, no. 5. p. 291-294.
November, 1938.

Reclamation.

Bureau of Reclamation. By J.C. Page, Commissioner. In Annual report
of the Secretary of the Interior for the fiscal year ended June 30,
1938. p. 51-83.

Refrigeration.

Bacteria, enzymes, and vitamins--indices of quality in frozen vegetables.
By Donald K. Tressler. Refrigerating Engineering. v. 36, no. 5.
p. 319-321. November, 1938. Years of study of frozen vegetables
have indicated clearly that scientist has at his command three very ac-
curate criteria, which are in reality, objective methods by which
quality of most frozen vegetables can be accurately determined. These
criteria are not related in any way, but each gives very real history
of care used (1) in selection of raw material, (2) in preparation of
vegetable for freezing, (3) in speedily handling product in freezing
plant, (4) in maintaining low temperatures during storage, transporta-
tion, and marketing of frozen product.

Farm and community refrigeration in the south. By C.J. Hurd. Refri-
gerating Engineering. v. 36, no. 5. p. 295-299. November,
1938. Tennessee Valley authority, in cooperation with land grant
colleges and state vocational agriculture education departments in
the valley, began study of community refrigeration in 1934. Investi-
gations were first directed toward development of suitable mechanical
refrigerators that 10 to 20 farm families could jointly use. Study
thus far has been directed toward securing data pertaining to prac-
tical application to farm practices and obtaining records on opera-
tion of these units.

Refrigerator Lockers.

New type of refrigerated locker system. Ice and Refrigeration.
v. 96, no. 1. p. 81-82. January, 1939. Called the "Polar Chest
Locker System." With Polar Chest system, no refrigerated space
is used for aisles or overhead coils. Customers have access to their

Refrigerator Lockers.

lockers in room of normal temperature, and lockers themselves are out of sight below floor level and are raised as needed like elevator. It is not expected that new system will replace conventional type locker storage, but rather further popularize locker storage idea because through Polar Chest system, advantages of cold storage lockers will be made available to great mass of consumers.

Out of season production affected by refrigerated locker plants.

By R.H. Gast. American Farm Digest. v. 1, no. 1. November 1938. p. 49-50.

Refrigerators.

Desert use of household refrigerators. By W.L. Holladay. Refrigerating Engineering. v. 36, no. 5. p. 309-311. November 1938.

Paper extends information by analysis of similar series of tests taken through cooperation of dealers associated with the author's company, in El Centro, Indio, Needles, Pomona, San Bernardino, Trona, California, and Phoenix, Arizona, during summer of 1937.

Research.

Influence of research on use of power. By R.E. Hellmund. Power Plant Engineering. v. 43, no. 1. p. 72-76. January, 1939.

National physical laboratory. Engineering. v. 146, no. 3801. p. 594-596. November 18, 1938.

Research - A national resource. I. Relation of the federal government to research. November 1938. Report of the Science committee to the National resources committee. Washington, D.C., 1938. 255 p.

Rice.

Cultivo del arroz por el sistema de transplante en la hacienda "La Otra Banda" Zana. By L.G. Prada. Vida Agricola. v. 15, no. 179. October, 1938. 801-802. Rice cultivation through the system of transplanting on the estate "La Otra Banda", Zana. Types of flumes used for measurement of water.

Septic Tanks.

Septic tank demonstrations. Orono, Me., 1938. University of Maine. p.13. College of agriculture. Extension service. Extension bulletin no.254

Silt.

Theory of silt transportation: discussion. By G.W. Howard and others. Proceedings. American society of civil engineers. v. 64, no. 8 part 1. p. 1724-1728. October 1938.

Silt. (Cont'd)

Use and design of settling basins. By George Burnet. Agricultural Engineering. v. 19, no. 11. November 1938. p. 480. Many construction features need additional study and demonstration, among them being correct location, size of basin, size and design of spillway, and further use of dams.

Soils.

Basis for rating the productivity of soils on the plains of eastern Colorado. By L.A. Brown. Fort Collins, Colo., 1938. 19p. Colorado state college. Colorado experiment station. Technical bulletin 25.

Some aspects of the chemistry of soil colloids. By L.A. Dean. Hawaiian Planters' Record. v. 42, no. 3. p. 163-166. Third quarter, 1938.

Spraying and Dusting.

Potato sprayer repair demonstrations. Orono, Me., 1938. p. 11. University of Maine. College of agriculture. Extension service. Extension bulletin no. 254.

Steam Tables.

V.D.I. steam tables. By J.H. Keenan. Mechanical Engineering. v. 60, no. 10. October 1938. p. 756-757.

Storage of Farm Produce.

Gas-storage of apples: precautionary measures. By Franklin Kidd and Cyril West. Journal of the Ministry of agriculture. v. 45, no. 7. p. 691-699. October, 1938. Best results in gas-storage of any variety of apples can be obtained only by use of equipment that will provide precisely those conditions which has been found, as result of extensive storage trials, to be most suitable for that particular variety. Recommendations, based on results of such storage trials, which are made from time to time, should be followed as closely as possible.

Some biological aspects of the storage of fruit. By V.H. Blackman. Science Progress. v. 33, no. 131. January 1939. p. 417-434.

Stoves.

Buying and using kerosene stoves. By M.M. Monroe and E.M. Cobb. Orono, Me., 1938. 23 p. University of Maine. Agricultural extension service. Bulletin no. 251.

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Sugar economics, statistics, and documents. By Myer Lynsky. New York, U.S. Cane sugar refiners' association, 1938. 305 p.

Sugar Cane.

Algunas soluciones al problema actual de la industria de la caña de azúcar. By A.R. Menrique. Revista Nacional de Agricultura. v. 34. Aug. 3, 1938. p. 2093-2111. Some solutions to the practical problem of the cane sugar industry.

Windrowing sugarcane injured by freezing temperatures. By J.I. Lauritzen, R.T. Balchand and C.A. Fort. Sugar Bulletin. v. 17, no. 3. November 1, 1938. p. 1-3. Consideration given here to effect of different degrees of freezing injury on abnormal changes, such as souring and gum formation and on inversion of sucrose in varieties Co. 281 and Co. 290 in experiments during period 1932-38 in vicinity of Houma, La.

Tires.

Recent trends in tractor tire design. By R.P. Gaylord. Implement Record. v. 36, no. 2. p. 15-16. February, 1939.

Rubber best by actual test. Better farm equipment and methods. v. 11, no. 4-5. p. 18-19. January, 1939. Interesting data provided by field tests of rubber and steel treads on farm tractors.

Tractors.

Cooperative tractor catalog. 23d annual edition, 1938-39. Kansas City, Mo., n.d. 344 p. Latest tractor tests completed by the University of Nebraska after 1938-39.

Utilization of Farm Products.

Industrial utilization of agricultural products. By H.R. Kraybill. Industrial & Engineering Chemistry. v. 31, no. 2. Industrial edition. February 1939. p. 141. Increased interest is result of (a) belief that depressed condition of agriculture following World War was due to accumulation of surpluses of agricultural products, and (b) to general acceptance of view that agriculture and industry represent two interdependent groups. Five important factors chiefly responsible for situation: (1) Cheap sources nitrogen were made possible by development of synthetic methods of production. (2) Improved agricultural practices have resulted in increased production. (3) Agriculture increased its production as result of demands during World War. Estimated that 40 million additional acres brought into cultivation at that time. (4) Replacement of horse and mule power by mechanical power resulted in reduction of consumption of grain. Products from 30 to 35 million acres replaced by products of oil wells. (5) With development of organic technology has been increased replacement of agricultural products in industry by products of mine and oil well. Fields for developing industrial uses for agricultural products may be classified into three groups: (1) Utilization of waste and by-products. (2) Introduction of new crops to yield products to take place of those now imported and used for industrial purposes, and (3) Development of new uses for crops or crop surpluses for purposes other than food.

Utilization of Farm Products. (Cont'd)

Manufacture of sweet potato starch in the United States. By H.S. Paine and others. Industrial and Engineering Chemistry. v. 30, no. 12. p. 1331-1348. December, 1938. Chemical research and engineering application involved in erection and operation of factory for production of starch from sweet potatoes are described with objective of furthering establishment in United States of industry to supply part of domestic requirements for so-called root starches. Properties of sweet potato starch were studied and evaluated from standpoint of use in various industries. Value of by-product pulp as cattle feed was established, and in this role it might play important part in southern agriculture. New method of dehydration was evolved for making possible storage of sweet potatoes and year-round operation of starch factories. This new method of dehydration makes possible additional sweet potato by-products and also various grades of flour which can be used in number of industries. Summary is given of lines of agricultural research which were undertaken in order to adapt sweet potato crop to this new type of utilization. Chemical and mechanical equipment requirements for sweet potato starch factory embodying experience gained to date are outlined.

Starch from the sweet potato. By Frank A. Montgomery. Scientific American. v. 158, no. 5. p. 280-281. May, 1938. Purity, color, and quality equal to the finest starches. Bleaching process perfected. Of great economic significance. Now in production. Laurel plant, Mississippi, was financed and sponsored by Federal Government with objectives of developing an industry that would alleviate rural-relief situation in southern Mississippi, and that would, at the same time, be of permanent benefit to southern agriculture.

Valves.

Standard method of rating and testing refrigerant expansion valves. Refrigerating Engineering. v. 36, no. 6. December 1938. p. 385-388.

Water Supply.

Monthly report on federal water resources investigations and construction projects, January 1939. Washington, D.C., National resources committee, Water resources committee, 1939. 83 p. Mimeographed.

Water use and conservation in Iowa. Iowa City, Ia., Water resources committee, Iowa State planning board, 1936. 4 v.
v. 1. Iowa-Cedar river basin,
v. 2. Des Moines, Skunk and Southeastern Iowa river basins,
v. 5. West Central Iowa river basins,
v. 6. Northwestern Iowa river basins.

Works progress administration ground water survey....Analyses made, map prepared, data assembled and report mimeographed by Works progress

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administration.....Austin, Tex., 1937-38. 3 v. Contents. v. 1 -
Andrews-Guadalupe. v. 2 - Hale-Lubbock. v. 3 - Miland-Swisher.

Water Supply, Rural

Electrically operated water systems for farms. By J.B. Brooks.
Lexington, Ky., 1938. 31 p. University of Kentucky. College of
agriculture. Extension division. Circular no. 319.

Running water for the farm and home. Orono, Me., 1938. p. 12.
University of Maine. College of agriculture. Extension service.
Extension bulletin no. 254.

Wood.

New ways of using wood found by research. Popular mechanics magazine.
v. 70, no. 2. p. 216-217. August, 1938. Forests are now looked
upon as source of raw materials for cellulose derivatives, paper pulp,
staple fiber, naval stores, wood distillation products and wood plastics.
Through chemistry supplies of pine trees in south and giant Douglas firs
in west are becoming available as sources of paper pulp. Through
research naval stores industry is seeing new methods introduced. U.S.
Forest Products laboratory is developing wood plastics by partial hydro-
lysis of wood and hot-molding the residue. At University of Idaho wood
is being gelatinized. Drying wood in kiln removes water particles sur-
rounding oriented structures and wood shrinks. If water is now added,
crystallites in wood spread apart, regular orientation is lost and
swollen, gelatinous mass of wood results. When this mass is compressed,
water is squeezed out without wood regaining its former structure. What
remains is mass of continuous physical form like vegetable parchment
and vulcanized fiber. This gelatinized wood can be molded and colored
during the process. It is about twice as resistant to rupture as
original wood.